

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Public Safety and Homeland Security	)	PS Docket No. 06-229
Bureau Seeks Comment on Petitions for	)	
Waiver to Deploy 700 MHz Public Safety	)	DA 09-1819
Broadband Networks	)	
	)	
	)	

To: The Public Safety and Homeland Security Bureau

**COMMENTS OF THE NORTH DAKOTA RURAL TELECOM COALITION**

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## SUMMARY

As described herein, the Flow Mobile request and the North Dakota request each fail to meet the requirements to justify grant of an FCC waiver. Both requests also raise issues under the Communications Act of 1934, as amended (the “Act”) by appearing to propose commercial use of public safety spectrum in violation of Section 337 of the Act. Moreover, the “game changing” radio access technology that forms the basis for these proposals is not appropriate for use in the 700 MHz public safety band because it creates the very real potential for harmful interference to public safety broadband and narrowband networks in adjacent states, and because its proponents have never demonstrated nor even presented any theoretical operation of roaming capability or seamless interoperability with the existing and future mobile wireless technologies that will be used for public safety broadband networks nationwide.

The July 17, 2009 North Dakota Petition identified Flow Mobile’s “4G-like” technology as the system to be operated under waiver, and identified Flow Mobile as the operator. To the extent that Flow Mobile potentially may be chosen as the contractor to provide the North Dakota public safety network, RTC must raise the following serious concerns (each of which is discussed in greater detail herein):

- The limited technical information to date about Flow’s proposed “4G-like” platform shows that it is a flawed technology that will not be readily compatible with the 700 MHz Long Term Evolution (“LTE”) 4G technology path adopted by nearly all national public safety organizations, including the Association of Public-Safety Communications Officials (“APCO”), the National Emergency Number Association (“NENA”) and the National Public-Safety Telecommunications Council (“NPSTC”).
- Flow’s proposal does not demonstrate that it comports with the waiver path set forth by the Public Safety Spectrum Trust (“PSST”), the entity chosen by the Commission to act as the public safety broadband licensee.
- The Flow proposal requires the use of public safety narrowband channels that have been allocated not only for statewide interoperable voice operations, but also for nationwide public safety interoperability. A grant of either the Flow Petition or the North Dakota Petition in its present form would confound the nationwide plan.
- Flow’s TDD-based technology – which appears to be essentially Wi-Fi that has been down-converted to 700 MHz – is likely to cause harmful interference to FDD-based public safety LTE networks in neighboring states and to FDD operations in the adjacent Upper 700 MHz D-Block.
- Flow’s technology is also likely to cause interference to public safety voice operations in neighboring states using their allocated narrowband 700 MHz spectrum as contemplated by the Commission.

Aside from these numerous and glaring technical deficiencies, the Flow Petition and North Dakota Petition do not appear to be ripe for grant. The proposed public safety network is not imminent, since North Dakota must undertake legally required contracting and appropriations processes, and should complete the public safety planning processes and coordinate with neighboring states as prescribed by the Commission's Rules. These processes will take time to play out, by which time the Commission is likely to have concluded its rulemaking in PS Docket No. 06-229 concerning the rules for deployment of the Shared Wireless Broadband Network ("SWBN"), as well as the role that the private sector may play in this process. North Dakota should be informed by these processes before settling on a 700 MHz "4G-like" technology that lacks interoperability and that is unlikely to be deployed on a wide scale basis in the US.

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To: The Public Safety and Homeland Security Bureau

**COMMENTS OF THE NORTH DAKOTA RURAL TELECOM COALITION**

The North Dakota Rural Telecom Coalition (“RTC”), on behalf of its member companies listed in Attachment A, respectfully submits these comments on the above captioned petitions for waiver, with a particular focus on the petitions submitted by the State of North Dakota<sup>1</sup> and by a commercial entity, New EA, Inc. d/b/a Flow Mobile (“Flow Mobile” or “Flow”).<sup>2</sup> RTC and its members are generally supportive of efforts by state and local governments – together with the public safety community – to proceed with deployment of the 700 MHz Shared Wireless Broadband Network (“SWBN”) as soon as possible. RTC and its members also support the notion that independent regional public safety networks can and should be incorporated into an interoperable “nationwide network of networks.” However, the waiver requests submitted by the State of North Dakota and Flow Mobile raise serious concerns, including those alluded to in the Commission’s August 14, 2009 Public Notice.<sup>3</sup>

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<sup>1</sup> See State of North Dakota, Petition for Expedited Waiver, PS Docket No. 06-229 (*filed* July 17, 2009) (“*North Dakota Petition*”).

<sup>2</sup> See New EA, Inc. d/b/a Flow Mobile Petition for Expedited Waiver PS Docket No. 06-229 (*filed* July 7, 2009) (“*Flow Petition*”).

<sup>3</sup> Public Notice, “Public Safety and Homeland Security Bureau Seeks Comment On Petitions for Waiver to Deploy 700 MHz Public Safety Broadband Networks”, Mimeo No. DA 09-1819, released August 14, 2009.

## **OVERVIEW**

As described below, the Flow Mobile request and, to the extent that it accommodates the Flow proposal, the North Dakota request, fail to meet the requirements to justify grant of an FCC waiver. Both requests also raise issues under the Communications Act of 1934, as amended (the “Act”) and the Commission’s public interest standard. Both appear to propose commercial use of public safety spectrum in violation of Section 337 of the Communications Act and related regulations. Even if the North Dakota and Flow Mobile requests did not involve commercial use of public safety spectrum, the “game changing” radio access technology that forms the basis for the Flow proposal is not appropriate for use in the 700 MHz public safety band because it creates the very real potential for harmful interference to public safety broadband and narrowband networks in adjacent states, and because its proponents have never demonstrated nor even presented any theoretical operation of roaming capability or seamless interoperability with the existing and future mobile wireless technologies that will be used for public safety broadband networks nationwide.

The July 17, 2009 North Dakota Petition identified Flow Mobile’s “4G-like” technology as the system to be operated under waiver, and identified Flow Mobile as the operator. Indeed, the North Dakota Petition was worded almost identically to the earlier Flow Petition. A revised petition was filed by the State of North Dakota on August 18, 2009 (“North Dakota Revised Petition”) and the original North Dakota Petition was withdrawn by a letter submitted on August 28, 2009 by Major General David A. Sprynczynatyk of the North Dakota National Guard. This revision of the original North Dakota Petition appears to be due in part to concerns about the need for North Dakota to follow State contracting procedures, especially for a project as significant as a statewide

public safety network. The August 28, 2009 revised North Dakota Petition has eliminated any specific mention of Flow Mobile, and states that a Request For Proposal (“RFP”) process will be followed to award any contract for a statewide network. However, the revised North Dakota Petition requests a waiver to use not only broadband public safety spectrum, but also all of the allotted 700 MHz *narrowband* public safety voice channels. Thus, the request still seems to be fashioned after the Flow Mobile proposal. To the extent that Flow Mobile potentially may be chosen as the contractor to provide the North Dakota public safety network, RTC must raise the following serious concerns (each of which is discussed in greater detail herein):

1. The limited technical information to date about Flow’s proposed “4G-like” platform shows that it is a flawed technology that will not be readily compatible with the 700 MHz Long Term Evolution (“LTE”) 4G technology path adopted by nearly all national public safety organizations, including the Association of Public-Safety Communications Officials (“APCO”), the National Emergency Number Association (“NENA”) and the National Public-Safety Telecommunications Council (“NPSTC”).

2. Flow’s proposal does not demonstrate that it comports with the waiver path set forth by the Public Safety Spectrum Trust (“PSST”), the entity chosen by the Commission to act as the public safety broadband licensee.<sup>4</sup>

3. The Flow proposal requires the use of public safety narrowband channels that

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<sup>4</sup> On May 7, 2009, the PSST filed an *ex parte* letter with the FCC concerning the requests of various state and local governments to deploy a local or regional public safety network using the 700 MHz public safety broadband spectrum, before the SWBN is constructed. To the extent the FCC considers such requests, the PSST has asked the FCC to ensure that any 700 MHz public safety operations are fully interoperable with the SWBN, and that the proposed local or regional systems do not undermine the 700 MHz public-private partnership framework. Other considerations cited in the PSST *ex parte* are: (1) Demonstrating the financial wherewithal to build the network; (2) relocating existing narrowband voice systems; (3) ensuring roaming capability with the SWBN; and (4) following FCC-prescribed minimum technology and system requirements for interim operations, designed to ensure interoperability.

have been allocated not only for statewide interoperable voice operations, but also for nationwide public safety interoperability. A grant of either the Flow Petition or the North Dakota Petition in its present form would confound the nationwide plan.

4. Flow's TDD-based technology – which appears to be essentially Wi-Fi that has been down-converted to 700 MHz – is likely to cause harmful interference to FDD-based public safety LTE networks in neighboring states and to FDD operations in the adjacent Upper 700 MHz D-Block.

5. Flow's technology is also likely to cause interference to public safety voice operations in neighboring states using their allocated narrowband 700 MHz spectrum as contemplated by the Commission.

Aside from these numerous and glaring technical deficiencies, the Flow Petition and North Dakota Petition do not appear to be ripe for grant. The proposed public safety network is not imminent, since North Dakota must undertake legally required contracting and appropriations processes, and should complete the public safety planning processes and coordinate with neighboring states as prescribed by the Commission's Rules. These processes will take time to play out, by which time the Commission is likely to have concluded its rulemaking in PS Docket No. 06-229 concerning the rules for deployment of the Shared Wireless Broadband Network ("SWBN"), as well as the role that the private sector may play in this process.<sup>5</sup> North Dakota should be informed by these processes before settling on a 700 MHz "4G-like" technology that lacks interoperability and that is unlikely to be deployed on a widescale basis in the US.

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<sup>5</sup> On September 17, 2009, FCC Chairman Genachowski advised Congress that the Commission expects to decide such matters by February 2010.



## **STATEMENT OF INTEREST**

RTC is a consortium made up of established telecommunications carriers providing services to most rural communities throughout the State of North Dakota, covering 95 percent of the state's geography. RTC's member carriers have joined forces on numerous occasions to implement statewide advanced telecommunications services that no individual carrier could accomplish on its own. RTC's members have individually and through joint efforts, invested over \$1 billion in the State's communications network, currently invest over \$100 million per year in upgrades, serve nearly 70,000 broadband customers, installed over 10,000 miles of fiber optic cable in the state, and provide carrier Ethernet, high speed internet access and other advanced services to the citizens of North Dakota. The members of RTC are involved in the provision of various wireless services in the state, including the provision of cellular service on a statewide basis in conjunction with Verizon Wireless. Thus, RTC and its members believe that they have valuable insights as to the best way to deploy public safety broadband in the State of North Dakota.

### **THE FLOW MOBILE AND NORTH DAKOTA REQUESTS FAIL TO MEET FCC STANDARDS FOR A WAIVER GRANT**

As discussed below, neither Flow Mobile nor the State of North Dakota have demonstrated that their 700 MHz proposal is in keeping with the applicable waiver standard. Section 1.3 of the Commission's rules provides the Commission with discretion to waive application of any of its rules upon a showing of good cause. In particular, Section 1.925(b)(3) provides for the grant of a waiver request only where it is shown that:

- (i) The underlying purpose of the rule(s) would not be served or would be frustrated by application of the instant case, and that grant of a waiver would be in the public interest; or

- (ii) In view of unique or unusual factual circumstances of the instant case, application of the rules would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.

Courts have affirmed the Commission's power to waive its rules if special circumstances warrant waiver and grant of the waiver serves the public interest.<sup>6</sup>

As an initial matter, the State of North Dakota cites no rules from which it seeks relief, and the State fails to make the public interest showing required under Section 1.3, Section 1.925(b) and *WAIT Radio*. The same is true of the earlier-filed Flow Mobile waiver request. To the extent that both requests rely upon the “unpredictable and uncertain future of the D-Block”, this concern has been at least partly addressed in light of the FCC Chairman's September 17 statements about the Commission's plan to address public safety and D-Block issues in conjunction with its report to Congress on a national broadband plan in February 2010. Neither waiver request provides any technical showing about what the State and Flow Mobile are proposing to do, and the waiver requests instead rely on vague descriptions of the technology to be used (*e.g.*, “4G-like” and “game changing technology”), rather than providing a detailed explanation of what they describe as a “unique” proposal. It is critical for the Flow Mobile and North Dakota waiver requests to provide the Commission with adequate information about the proposed operation, since these entities are relying on a new and untried technology (unlike the other state and local governments that seek to deploy widely accepted technologies like LTE and cdma2000 EV-DO, for which well known networking and interoperability standards have been developed). Indeed, the description of the North Dakota/Flow Mobile proposal is less than two pages long (double spaced). Both waiver

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<sup>6</sup> *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972).

requests claim that “The Governor’s letter confirms that Flow Mobile’s network would be compatible with the Public Safety Spectrum Trust’s (PSST) planned network.”

However, North Dakota Governor Hoeven is not a representative of the PSST, and his letter does not mention, let alone demonstrate, how Flow Mobile’s TDD network would be compatible with a network that the PSST is planning to deploy using LTE technology in an FDD configuration.

Further, letters of support from the North Dakota and South Dakota chapters of NENA should be discounted because neither of these states has experience with the deployment of networks that utilize 700 MHz narrowband spectrum. Neither state to date appears even to have convened a meeting of a 700 MHz Regional Planning Commission (RPC), and neither would be aware of the significant interference concerns raised Flow Mobile’s proposed 700 MHz technology.

Conspicuously absent from either the Flow Mobile or North Dakota waiver request is any indication that the State has coordinated its proposed broadband use of narrowband 700 MHz public safety with neighboring states, such as Minnesota. In contrast to the Dakotas, Minnesota has committed to substantial 700 MHz narrowband operations, and a 700 MHz Regional Planning Committee (Region 22) that has been an active participant in PS Docket No. 06-229. As discussed further below, this shortcoming justifies a denial of any proposal to use the public safety narrowband channels, since there is evidence in the Commission’s own records that at least one neighboring jurisdiction has already committed to deploying these channels for the voice operations for which they were intended, and has objected to inconsistent uses. The fact that North Dakota has yet even to follow the various regional planning and coordination processes contemplated by the Commission’s Rules also indicates that the North Dakota

public safety network proposal is still so early in the planning stages, and has so many hurdles to clear, that by the time it would be finalized, the SWBN plan will be completed by the Commission and implementation will be underway. Additional steps that must be taken include the issuance of an RFP and completion of the appropriations process, as necessary under state law for such a substantial undertaking.<sup>7</sup>

As discussed above, every grant of Commission authority, including waiver grants, must be based on a finding that the public interest would be served. As a matter of public interest policy, unless the Petitioners are proposing to deploy a 3GPP Long Term Evolution (“LTE”) network that complies with the protocols and standards established by the NPSTC 700 MHz Public Safety Broadband Task Force (“BBTF”), or possibly cdma2000 EV-DO as proposed by the City of Boston,<sup>8</sup> the Commission should not act on petitions for waiver to use the 10 megahertz of 700 MHz public safety broadband spectrum currently licensed to the PSST. Proprietary technologies such as the one proposed by Flow Mobile are not geared for use as a transition to the LTE standard that has been adopted by the public safety community. As discussed further below, the technical challenges notwithstanding, any large-scale development of a dual-mode Flow Mobile / LTE technology is precluded by the scale and timeframe necessary for such an undertaking. Therefore, in order for North Dakota to transition to the SWBN, a complete cutover to LTE will be required. If a complete cutover from a preliminary technology to

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<sup>7</sup> Chapter 4-12-04 of the North Dakota Administrative Code (Ethics in Public Procurement) provides that solicitations for bids or proposals will be issued in sufficient time and in a form that will permit the highest practicable degree of full and fair competition. *See* NDAC Section 4-12-04-02. This emphasis on competition is fundamental to the integrity of the State procurement process. The State has acknowledged its obligation to issue an RFP in its revised waiver request, and in an August 11, 2009 letter from Governor Hoeven to New EA, Inc. (“When selecting commodities or services that will be used by state government, North Dakota state law requires executive agencies to use a competitive bidding process that provides equal opportunity to all qualified entities to submit a proposal for the service.”)

<sup>8</sup> *See* City of Boston Request for Waiver, PS Docket No. 06-229 (filed with the FCC on Dec. 11, 2008) (*Boston Petition*). Interoperability of cdma200 EV-DO with LTE is standardized today by 3GPP sister organization 3GPP2, governing CDMA networks.

LTE is required, the preliminary technology is not interoperable, and must be considered an interim technology. Use of an unproven, proprietary interim technology would not be highly regarded at all by PSST as a considered use of its spectrum, particularly if it pollutes the available 700 MHz spectrum targeted for nationwide LTE, and undermines public safety's principal tenet of interoperability.

**If an interim solution is needed by the State of North Dakota, there are far better, time-proven and widely available solutions, such as existing 3G technology on a major carrier network. Indeed, statewide coverage via 3G cdma2000 EV-DO is available today from Verizon Wireless, providing throughputs nearly that of Flow Mobile's proposed, so-called "4G-like" technology, and it is purpose-built and time-proven in the fully-mobile environment, with inexpensive devices such as wireless USB modems readily available.** Verizon documented this fact, and its implementation of LTE throughout its nationwide wireless footprint over the next few years, in a proposal to North Dakota (copy attached) submitted in response to the August 21, 2009 Request for Information ("RFI") issued by the state to gather information about potential broadband technologies.<sup>9</sup> A solution such as the path being implemented by Verizon would not require a hot cutover, as an overlap period where devices from both services are utilized is made possible by it, without polluting the available 700MHz spectrum upon which to deploy LTE. In fact, interoperability is made possible by virtue of Verizon Wireless' incorporation of the standardized eHRPD technology discussed below.

Based on the foregoing, both waiver requests fall short of the standard for grant,

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<sup>9</sup> See Attachment B, Response to Request for Information - Study of Emerging Technology in Broadband Public Safety Networks, Cellco Partnership d/b/a Verizon Wireless, National Government Operations. Unfortunately, North Dakota cancelled the RFI without giving full consideration to the Verizon proposal. See Attachment C, RFI Cancellation Notice, ND Solicitation No. 110.7-09-044, by Email dated September 4, 2009 from the ND State Procurement Office.

since the proponents have not shown the lack of an alternative to the proposed use of the narrowband public safety spectrum. LTE can be deployed without using the narrowband spectrum, and Verizon has offered to do so. Indeed, Verizon is implementing LTE nationwide (including North Dakota) on an expedited schedule, regardless of whether North Dakota uses that technology for public safety. No other unique circumstances have been shown to justify a waiver grant, and the requests are lacking in enough detail to adequately apprise the Commission as to exactly what is to be approved. Moreover, a grant based on Flow's proprietary technology proposal would confound interoperability with other public safety entities (thereby undermining the purpose of the public safety spectrum allocation rules), and would not serve the public interest.

#### **DISCUSSION OF ISSUES RAISED BY THE COMMISSION**

The Commission's August 14, 2009 Public Notice appropriately raises several serious concerns about the Flow Mobile/North Dakota requests, over and above the general failure to meet the waiver standard described above. These additional concerns are addressed below. While North Dakota subsequently revised its waiver request to delete explicit mention of the Flow Mobile proposal, the terms of the revised waiver are designed to facilitate the Flow Mobile proposal, by continuing to request use of not only the public safety broadband spectrum but also the public safety narrowband channels. Therefore, to the extent that the North Dakota waiver request would accommodate the Flow proposal, its modified request still raises the issues identified in the Public Notice.

Specifically, the Commission's Public Notice identifies the following questions with regard to the Flow Mobile and North Dakota waiver requests:

- a) Is Flow Mobile eligible to seek such a waiver under the terms of Section 337 of the Act? Can North Dakota seek such a waiver on their behalf?

- b) Are the “commercial and residential services” Flow Mobile seeks to provide permitted on the public safety spectrum under Section 337?
- c) What are the implications of Flow Mobile’s and North Dakota’s proposal to provide broadband service on designated narrowband spectrum? Would this give rise to interference concerns with narrowband operations in adjacent states or current in-state deployments? Is the proposed operation consistent with regional plans for this spectrum?
- d) Is the Flow Mobile/North Dakota proposal to deploy a “4-G like” network consistent with the Commission’s interoperability and integration goals?

**I. Flow Mobile is Not Eligible to Seek Use of the Public Safety Spectrum, and the State of North Dakota Cannot Act as Flow Mobile’s Agent to Overcome this Lack of Eligibility**

Section 337 of the Communications Act, as amended, required the Commission to allocate, from the 746-806 MHz Band, 24 megahertz for public safety services and 36 megahertz for “commercial use to be assigned by competitive bidding pursuant to section 309(j).”<sup>10</sup> Section 337(f)(1) of the Act defines “public safety services” as follows:

- (f) Definitions – For purposes of this section:
  - (1) Public Safety Services – The term “public safety services” means services –
    - (A) the sole or principal purpose of which is to protect the safety of life, health, or property;
    - (B) that are provided -
      - (i) by State or local government entities; or
      - (ii) by nongovernmental organizations that are authorized by a governmental entity whose primary mission is the provision of such services; and
    - (C) that are not made commercially available to the public by the provider.<sup>11</sup>

The licensing eligibility rules set forth in 47 C.F.R. § 90.523 were designed to implement these statutory requirements. Rule Sections 90.523 (a)-(d) specify the types of entities that are permitted to hold 700 MHz public safety licenses, and impose limitations on how the 700 MHz public safety spectrum may be used. Under the Communications Act and the Commission’s Rules, eligible users of 700 MHz public safety narrowband

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<sup>10</sup> 47 U.S.C. § 337(a).

<sup>11</sup> 47 U.S.C. § 337(f).

channels are limited to either (a) state or local government entities, or (b) nongovernmental organizations (NGOs) whose sole or principal purpose is to protect the safety of life, health or property. Flow Mobile, a privately-owned, for-profit startup business whose self-proclaimed mission is to provide “all rural residents with an affordable mobile broadband service”<sup>12</sup> meets none of these eligibility criteria. As a private business, Flow obviously is not a governmental entity. Flow’s recent submission of hundreds of individual applications seeking broadband stimulus funding for last mile remote area projects through the RUS BIP program suggest that its primary mission, is the provision of for-profit broadband service to the public.<sup>13</sup> Both the Flow waiver request and the North Dakota waiver request indicate that commercial service is contemplated as part of the statewide network project.<sup>14</sup> The wording of letters that Flow obtained from the Dakota Chapter of NENA and North Dakota Governor John Hoeven indicates that the company’s 700 MHz network would “be utilized for both public safety as well as for commercial use, with priority access for public safety.” This need for priority access indicates an intended co-mingling of public safety and commercial traffic. To the extent that Flow Mobile would provide commercial services using public safety spectrum, Flow would not be a permissible licensee of 700 MHz public safety

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<sup>12</sup> See *Flow Petition* at p. 3.

<sup>13</sup> Review of the NTIA’s database of applications for initial round broadband stimulus funding show that New EA d/b/a Flow Mobile has filed over 100 applications proposing a “4G-like mobile broadband WiFi network.” The projects are each summarized as follows:

**Applicant:** NEW EA, INC. DBA FLOW MOBILE Bismarck, ND

**Contact:** Sree Tangella 701-255-9500

**Project title:** Flow Mobile – [State] – [City/Area]

**Program:** BIP

**Project type:** Last Mile Remote Area

**Loan request:** \$ X

**Status:** Received

**Description:** The project will deploy a 4G-like mobile broadband WiFi network serving residences, business, and community anchor institutions with voice, video and data services in a mobile environment at speeds of 3 Mbps to each end user. The advanced, low-cost technology will provide broadband access over an open access network enabling any end-user device with WiFi access.



spectrum.<sup>15</sup>

Flow cannot escape the Section 337 restriction simply by recruiting the State of North Dakota file a waiver request in its place. Rule Section 90.523 (d) provides that, regardless if the 700 MHz public safety licensee is a governmental entity or an NGO that is otherwise eligible, “no entity is eligible to hold an authorization for a system operating in the 764–776 MHz and 794–806 MHz frequency bands on the basis of services, the sole or principal purpose of which is to protect the safety of life, health or property, that such entity makes commercially available to the public.”

It should also be noted that Flow Mobile has not been designated by the State of North Dakota as an NGO authorized to provide public safety services. Such designation will require the completion of an RFP process at a minimum.

## **II. Flow Mobile’s Proposed Commercial and Residential Services Would Not Comport with Section 337 of the Communications Act**

North Dakota’s July 17 waiver request was substantially identical to Flow’s request and was filed just ten days later. It identified Flow Mobile as the chosen equipment provider/system operator for the North Dakota public safety network, and indicates that Flow plans to deploy “an interoperable emergency communications and joint use network providing mobile broadband services using open standards and compatible with LTE and other 700 MHz standards.” Neither the State nor Flow provide

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<sup>14</sup> See *Flow Petition* at p. 8; *North Dakota Petition* at pps. 3-5, 7-8.

<sup>15</sup> A recent consultant’s report prepared at the request of North Dakota suggests that there is an “expectation” that Flow will build parallel commercial and public safety networks, to separate commercial and safety traffic. See Elert & Associates, “State of North Dakota Broadband Solutions Review” dated October 12, 2009 (“*Elert Report*”) at p. 15 para. 4. However, Flow does not appear to have publicly announced such decision; and the same consultant report indicates elsewhere that “if not a separate network, IEEE 802.1p and 802.1Q are expected to be utilized” to prioritize safety-related traffic. *Id.* at p. 15 para. 6. This latter statement suggests that the separate network idea is not a certainty, and commercial traffic may be placed on the public safety network.

adequate details about how Flow’s proposed network will be configured, or how exactly it will operate (much less how it will be interoperable with 700 MHz public safety networks nationwide), but it is clear that Flow cannot use public safety spectrum for services that are made available to the public.

### **III. Flow Mobile’s Technology Will Not Be Interoperable with Nationwide LTE Networks**

The public safety community has overwhelmingly endorsed LTE technology as the technology for public safety broadband operations, including the planned nationwide SWBN.<sup>16</sup> “Interoperability” necessarily dictates use of a single, common technology and spectrum, or, co-existence of two technologies in some dual-mode, inter-working fashion. Seamless interoperability – within a network and between networks – is obviously necessary to serve public safety’s needs in the mobile environment, as well as to accommodate the public safety community’s prescribed “network of networks” for the SWBN. To the best of RTC and its members’ knowledge, Flow Mobile has deployed only one 700 MHz base station in its test-bed in Dickinson, North Dakota, and it has never demonstrated even a seamless handoff between its own 700 MHz access points, let alone any interoperability between its 700 MHz Wi-Fi network and any other commercial or public safety wireless network. It simply does not make sense for the FCC to grant request for regulatory relief for an “interoperable” public safety network if its proponents have not yet demonstrated or even presented any theoretical operation of robust voice and

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<sup>16</sup> APCO and NENA jointly announced their endorsement of LTE as the technological standard to be used in the development of a nationwide interoperable broadband network in the 700-MHz band by press release issued on June 9, 2009. See [http://www.apco911.org/new/news/nena\\_endorse\\_lte.php](http://www.apco911.org/new/news/nena_endorse_lte.php). The 15 public-safety organizations of the National Public Safety Telecommunications Council (NPSTC) announced their unanimous endorsement of LTE for the public safety broadband network on June 11, 2009. See [http://www.npstc.org/documents/Press\\_Release\\_NPSTC\\_Endorses\\_LTE\\_Standard\\_090610.pdf](http://www.npstc.org/documents/Press_Release_NPSTC_Endorses_LTE_Standard_090610.pdf). The PSST announced that its Board of Directors unanimously voted to endorse LTE as the preferred technology standard for the Nationwide 700 MHz Public Safety Wireless Broadband Network on July 24, 2009. See <http://www.psst.org/documents/PSSTPress072409.pdf>.

data interoperability with existing mobile wireless networks, much less future 4G technologies. Indeed, one cannot even consider Flow Mobile's technology suitable for mobile deployment at all unless and until its proponents have demonstrated seamless handoff capability within its own network in a real-world setting, and the ability to carry full broadband such as interactive video in the limited amount of channel bandwidth it will have in practice.<sup>17</sup>

The need for 100% interoperability of public safety broadband systems is paramount. One can easily imagine situations where emergency teams from neighboring states are called upon to assist local authorities in disaster response and relief efforts. If North Dakota were to implement a stand-alone system for its own broadband wireless network, first responders from jurisdictions that have deployed 700 MHz networks based on an LTE network standard (as endorsed by APCO, NENA, NPSTC and the PSST)

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<sup>17</sup> A standard unlicensed Wi-Fi OFDM (Orthogonal Frequency Division Multiplex) composite carrier from a single access point requires a contiguous 20 MHz channel of spectrum. An award of all 700 MHz spectrum requested would yield only three non-contiguous 5 MHz channels. Unlike OFDMA (Orthogonal Frequency Division Multiple Access) used in LTE, physically adjacent OFDM Wi-Fi access points cannot be on the same frequency; thus, subdivision of the available spectrum into multiple channels – typically four at the minimum for a workable tri-sector frequency re-use pattern – is required. Flow Mobile had 16 MHz of contiguous 700 MHz spectrum available under a Special Temporary Authority from the FCC for its demonstration in Dickinson. Any throughput possibly demonstrated in a single 16 MHz or even a standard 20 MHz channel of contiguous spectrum necessarily will be reduced by the same factor or more as the reduction in the amount of actual channel bandwidth available in practice. (i.e., the 20-24 Mbps of peak throughput available from a standard 20 MHz WiFi carrier while stationary necessarily must fall to less than a fourth of that.) Further, this would have to be *shared* between the uplink and downlink in Wi-Fi's TDD environment. The associated scaled-down peak throughputs, which would be available only in perfect radio channel conditions, also would only be for *stationary* users. Wi-Fi is inherently a WLAN technology for fixed/nomadic use; its OFDM modulation and multiple access schemes were never intended and are unsuitable for the fully mobile environment, unlike OFDMA, which was purpose-built for it and is common to the three and only three fully mobile broadband technology paths tentatively identified by the International Telecommunications Union ("ITU") as 4G, of which LTE is one. Wi-Fi is not included as one of the paths. Given just 2 x 5 MHz of spectrum, LTE in its initial configuration can achieve 20 Mbps downlink simultaneously with 7 Mbps uplink, with no re-use pattern required. This will remain in the multi-Mbps range in fully mobile operation, while Wi-Fi, even with a beam-forming technique added, is likely to fall to only a few hundred kbps in the same amount of spectrum, due to its inherent inability to deal with the rapidly changing and multipath-fading mobile environment. When one considers that this must then be shared among all users being served by a given access point or cell site, and further, that Wi-Fi is unable to protect itself from multiple user overload of a given AP, it becomes apparent why the spectral efficiency provided by LTE and the ability to control and redistribute user access to access points is required, and why it was selected by the public safety community. It also becomes clear that the available spectrum must be leveraged to the maximum to support even one system, and is insufficient to

would not have access to *any* public safety broadband network when operating within North Dakota. Moreover (and as discussed more fully below), visiting emergency responders will be unable to communicate using 700 MHz public safety narrowband radios (*e.g.*, on designated nationwide interoperability channels) if this spectrum has been repurposed for use in Flow Mobile's proprietary network. The importance of interoperability with respect to public safety communications networks is emphasized in Section B-2 of the 2008 Federal Strategic Spectrum Plan.<sup>18</sup> Indeed, NTIA concludes its discussion of non-Federal spectrum use and future spectrum requirements with the following observation:

With the additional 700 MHz spectrum available for a nationwide interoperable broadband public safety system, state, local and tribal public safety entities should be able to develop interoperable systems (both narrowband and broadband) which significantly improve the communications capabilities needed to safeguard life and property.<sup>19</sup>

Grant of the requested waiver to deploy Flow Mobile's unproven and proprietary technology in the State of North Dakota would therefore frustrate the goal of fostering interoperable public safety networks (both narrowband and broadband) and it would isolate North Dakota from the standards and systems adopted by other States.

#### ***A. Flow Mobile's Wi-Fi Technology Is Incompatible with LTE***

The down-converted Wi-Fi technology on which the Flow Mobile system appears to be based is incompatible and will not co-exist with LTE. Separate spectrum, or timeslots on the same spectrum; and nationwide infrastructure and devices that would accommodate both LTE and Flow Mobile's proprietary technology, would be required.

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support two in any dual-mode arrangement, especially without optimum spectral efficiency.

<sup>18</sup> See Spectrum Management for the 21<sup>st</sup> Century, The President's Spectrum Policy Initiative, U.S. Department of Commerce, NTIA, March 2008 ("Federal Strategic Spectrum Plan") available online at <http://www.ntia.doc.gov/reports/2008/FederalStrategicSpectrumPlan2008.pdf>.

<sup>19</sup> *Id.* at B-141.

Notwithstanding the fact that there is precious little public safety 700 MHz spectrum to accommodate reasonable throughputs even for one technology, let alone for two, any assumption of nationwide dual-mode 700 MHz infrastructure and devices of this type would be implausible.

Some form of interworking of the foreign technologies (Wi-Fi and LTE), similar to the eHRPD standard described below, and involving core networks and devices, would need to be developed and ultimately standardized, for this arrangement to be interoperable. It would be irrational, however, to expect an entire ecosystem involving Flow Mobile's or anyone else's proprietary/non-3GPP technology interworking with LTE to be standardized and developed to the point of commercial readiness by the time BBTF-identified LTE itself is generally available for the State of North Dakota and the SWBN.

***B. Flow Mobile's Wi-Fi Technology Lacks the Scale Necessary to Drive Foreign Technology Interworking***

Even with standardization, the only way such interworking realistically comes to pass is with significant demand, sufficient to drive the development and creation of the associated device and infrastructure ecosystem. Currently the only technologies for which any development has taken place in the U.S. toward LTE interoperability are 3GPP's own 3G technology – UMTS/HSPA, driven by AT&T and other major 3GPP carriers' need for 4G/3G interworking, and, cdma2000 EV-DO, driven by Verizon and other major 3GPP2 (CDMA) carriers' similar need. The former is part of a natural migration process specified by 3GPP. The latter, called eHRPD (evolved High Rate Packet Data), was developed jointly by 3GPP and 3GPP2 to accommodate interworking between the normally disparate networks, and is being deployed by Verizon today toward

their LTE rollout next year. The only platform even remotely close to providing Wi-Fi interoperability with any 3GPP technology, let alone with 4G LTE, is a system employed by T-Mobile called UMA (Unlicensed Mobile Access), now incorporated into the 3GPP specification, which allows “Voice over Wi-Fi” voice calls to be registered, authenticated and to hand off to 2G GSM cellular circuit-switched voice calls, using specialized equipment and software in the core network and in the handsets. UMA, like Flow Mobile’s for example, began as a proprietary vendor technology, and required years of development before it was ultimately incorporated into the 3GPP specification, all before any commercial ecosystem could be developed thereafter, which in-turn only occurred in response to large-scale demand by T-Mobile. UMA does not provide for any data session interoperability. Nor does it yet provide for such voice handoff to 3G UMTS/HSPA, let alone any interoperability with 4G LTE, the notion of which even has only recently been suggested.

Interworking by its very nature denotes a set of standards to which disparate technologies must adhere in order to accomplish it. 3GPP2 for example has established eHRPD standards for interworking between EV-DO and LTE.<sup>20</sup> These standards govern important network management and operations issues such as user authentication and authorization procedures and network security. Flow Mobile has repeatedly stated that its technology is “standards based” and claims it will therefore have “the ability to accommodate all technologies, including LTE.” But the truths of the matter are: Flow has *no apparent experience* with LTE, let alone in interworking with LTE. Flow Mobile’s down-conversion of unlicensed OFDM Wi-Fi into smaller channels of 700MHz spectrum is not standardized anywhere. Even if it were, although conceptual support for

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<sup>20</sup> See 3GPP2 “E-UTRAN - eHRPD Connectivity and Interworking: Core Network Aspects” at [http://www.3gpp2.org/Public\\_html/Specs/X.S0057-0\\_v1.0\\_090406.pdf](http://www.3gpp2.org/Public_html/Specs/X.S0057-0_v1.0_090406.pdf).

interfacing “Untrusted Non-3GPP” networks such as WiFi with LTE’s Evolved Packet Core does exist in the 3GPP specification, no seamless interworking with LTE (such as 3GPP2’s eHRPD) for Wi-Fi (much less Flow Mobile’s proprietary version of 700 MHz Wi-Fi) has been developed for any dual-use scenario. Moreover, there can be no guarantee that an LTE-Flow Mobile interoperability will *ever* exist.

**Flow Mobile glosses over the enormity of this flaw with a surprisingly candid admission in its BTOP application: “The network will be capable of inter-operating with LTE devices once the interoperability standards are developed.”**<sup>21</sup> Based on publicly available information, Flow Mobile has never demonstrated nor even presented any theoretical operation of interoperability from its 700 MHz Wi-Fi technology to LTE, nor evidenced any LTE product. Nor does it appear even that they are committed to develop this inevitable requirement. The Elert Report indicates that Flow has stated, “If a standard 4G solution is developed and is financially viable for North Dakota, Flow Mobile would review as a *possible* future upgrade.”<sup>22</sup> “4G” in the context of the Elert Report was any technology capable of providing 4Mbps throughput.<sup>23</sup>

### ***C. The FCC Should Not Grant Waivers for Interim Solutions***

As discussed above, unless such development takes place, which is precluded by the necessary scale and timeframe for any contemplated dual-mode Flow Mobile / LTE operation, a complete cutover to LTE will be required. Again, if a complete cutover from

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<sup>21</sup> See Flow Mobile North Dakota BTOP Application “North Dakota State Wide Mobile Broadband Project for Public Safety & Underserved,” Executive Summary at pp.2. This document is available online at: <http://www.ntia.doc.gov/broadbandgrants/applications/summaries/1608.pdf>.

<sup>22</sup> Elert Report at page 21, response to question, “Is there a plan to move to a 4G standard solution when it becomes available?” (emphasis added)

<sup>23</sup> Elert Report at page 19, response to question, “How does the proposed technology measure up to what 4G is defined as today?”

a preliminary technology to LTE is required, the preliminary technology is not interoperable, and must be considered an interim technology. **If an interim solution is needed by the State of North Dakota, there are far better, time-proven and widely available solutions, such as existing 3G technology on a major carrier network.**

***D. Flow Mobile's TDD System is Likely to Interfere with Neighboring FDD-based LTE Systems***

Interoperability will be key in allowing North Dakota's public safety community to coordinate their actions with neighboring jurisdictions. The LTE technology to be deployed in the United States will be Frequency Division Duplex (FDD)-based. This is true for both commercial and public safety operations: The NPSTC Broadband Task Force ("BBTF") has found that "full duplex, FDD will be the primary access method used in public safety LTE networks."<sup>24</sup> If in the same spectrum, or potentially even if in adjacent spectrum,<sup>25</sup> this will be incompatible with the Wi-Fi-derived Time Division Duplex ("TDD")<sup>26</sup> technology on which the Flow Mobile system appears to be based. The use of an incompatible technology will promote a situation in which North Dakota's public safety broadband network may not only fail to achieve interoperability, but may cause harmful interference to, and suffer interference from, the FDD-based LTE systems that are likely to be implemented by neighboring states.

The Upper 700MHz channel plan in the U.S. is intended for FDD operations,

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<sup>24</sup> *BBTF Report and Recommendations* at p. 56.

<sup>25</sup> For similar reasons discussed in the paragraph that follows for TDD vs. FDD operations, Flow Mobile's technology is likely to cause harmful interference with attempted LTE deployments in the adjacent D Block, both in neighboring states *and* in North Dakota, by future D Block auction winner(s) in partnership with PSST. If the D Block ultimately goes to auction, the likelihood of harmful interference and interoperability issues with the existing system will chill private interest in the D Block for the North Dakota / South Dakota / Minnesota / Montana region by anyone having done proper due diligence on it prior to the auction.

<sup>26</sup> Time Division Duplex, also referred to as "Half-Duplex."



which is also now prescribed by NPSTC in its *BBTF Report and Recommendations*. FCC-prescribed signal limits at the market borders were intended for neighboring FDD operations. Neighboring FDD and TDD systems are very likely to interfere. This is because, even if signal levels are kept to the FCC-prescribed limits at the market borders, during the period of time that TDD transmitters on a prescribed FDD uplink channel frequency are transmitting their downlinks, these powerful base station transmitters mounted high up on towers will interfere with neighboring, highly sensitive base station receivers on the same frequency, also mounted high up on towers, attempting to hear low-power signals from mobiles at the surface. While the signals arriving at the border from the TDD transmitters may be of marginal level for useful communications with their own mobiles, they likely will be more than powerful enough to interfere with neighboring FDD receivers' ability to hear.

#### **IV. The Flow Proposal Would Usurp Public Safety Narrowband Channels That the State of North Dakota and Neighboring States are Planning to Use for Interoperable Voice Operations**

The Flow Mobile network requires a waiver not only to use the public safety 700 MHz broadband spectrum designated by the FCC, but also to use the public safety *narrowband* channels in 700 MHz. The FCC (in 47 CFR §§ 90.547 and 90.548) and the public safety community have designated the narrowband spectrum for use as public safety interoperable digital (APCO Project 25 or "P25") voice channels, to address the problem so graphically illustrated during the September 11, 2001 terrorist attack, when public safety responders were unable to communicate with each other. The Flow Mobile proposal contemplates asking for use of all of the public safety narrowband channels, even though most have been set aside by the FCC not for statewide use but for

nationwide interoperability operations.<sup>27</sup> North Dakota continues to ask for the narrowband spectrum in its modified waiver request, apparently at Flow Mobile's behest, as the narrowband spectrum would not be required by an LTE deployment. However, North Dakota apparently also contemplates support of interoperable narrowband P25 operations on these channels, as evidenced by its current RFP for communications trailers equipped with 700 MHz P25 radios.<sup>28</sup> If the Flow Mobile proposal is adopted by the State, it would be committing state resources to a network configuration that could interfere with its own plan to use P25 radios, and would frustrate the nationwide interoperable public safety voice network by making North Dakota's 700MHz voice channels incompatible with and a source of interference to the voice systems of neighboring jurisdictions – a second type of incompatibility that will isolate the State.

As recently as last Spring, North Dakota was faced with flooding that required an emergency response involving rescue materials and personnel from at least six different states.<sup>29</sup> As discussed below, at least one of these neighboring jurisdictions has already committed to deploying 700 MHz narrowband voice operations, and others are likely to follow suit in the near future under the P25 plan. North Dakota should not undercut its ability to work with neighboring states in responding to emergencies by moving to a technology that will not be compatible with other public safety voice systems.

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<sup>27</sup> While North Dakota's license lists the entire public safety statewide narrowband allocation (a total of 12MHz), a condition on the license referring to Rule Section 90.531(b)(5) and other restrictions in the FCC's rules limit the state to using only 2.4 MHz of the narrowband spectrum. The rest of narrowband channels are reserved for *nationwide* interoperability use.

<sup>28</sup> See North Dakota OMB/Central Services Division Invitation for Bid re: "Mobile Communication Trailers" (Bid No. IFB-540-DES-0904) issued September 10, 2009; available online at <https://secure.apps.state.nd.us/csd/spo/services/bidder/listCurrentSolicitations.htm>.

<sup>29</sup> Neighboring Midwestern states of Minnesota, South Dakota, Montana, Missouri, Wisconsin and Iowa sent Guardsmen and provided other emergency management assistance in support of flood relief efforts in North Dakota. See Press Release, "09-117 Flood Feature: Minnesota Guard Soldiers Thanked for Flood Assistance" by Senior Master Sgt. Ralph Kapustka & Spc. Joshua Dodds, North Dakota National Guard (posted on April 25, 2009) at <http://www.ndguard.com/news/detail.asp?newsID=385>.

***A. The State of North Dakota Has an Obligation to Administer the 700 MHz Public Safety Narrowband Spectrum through the Regional Planning Process and to Minimize the Potential for Interference To Narrowband Operations in Adjacent Regions***

In 1998, the FCC adopted a band plan and service rules to begin the licensing process for 24 megahertz of public safety spectrum in the 700 MHz band (764-776 MHz and 794-806 MHz).<sup>30</sup> The *First Report and Order* also established a regulatory framework whereby responsibility for the administration of the 700 MHz public safety narrowband “General Use” channels was bestowed upon local public safety entities, acting through Regional Planning Committees (RPCs).<sup>31</sup> There are fifty-five RPCs nationwide, and each committee is required to submit a plan for the General Use spectrum to the FCC. See 47 C.F.R. § 90.527. Each RPC must incorporate certain common elements into its 700 MHz plan, as explained in 90.527 (a)(1)-(8), and each is obligated to coordinate its 700 MHz regional plan with adjacent regions. Moreover, when proposing modifications to a regional plan, an RPCs must submit a written request to the Commission and certify that it has successfully coordinated and obtained consent from all adjacent regions.<sup>32</sup>

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<sup>30</sup> See Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket No. 96-86, *First Report and Order and Third Notice of Proposed Rulemaking*, 14 FCC Rcd 152 (1998) (*First Report and Order*).

<sup>31</sup> *Id.* The narrowband General Use channels are designated in Rule Section 90.531(b)(6).

<sup>32</sup> **§ 90.527 Regional plan requirements.**

Each regional planning committee must submit a regional plan for approval by the Commission.

- (a) Common elements. Regional plans must incorporate the following common elements:
  - (1) Identification of the document as the regional plan for the defined region with the names, business addresses, business telephone numbers, and organizational affiliations of the chairpersons and all members of the planning committee.
  - (2) A summary of the major elements of the plan and an explanation of how all eligible entities within the region were given an opportunity to participate in the planning process and to have their positions heard and considered fairly.
  - (3) A general description of how the spectrum would be allotted among the various eligible users within the region with an explanation of how the requirements of all eligible entities within the region were considered and, to the degree possible, met.
  - (4) An explanation as to how needs were assigned priorities in areas where not all eligible entities could receive licenses.
  - (5) An explanation of how the plan had been coordinated with adjacent regions.

On review of available FCC records, it does not appear that the State of North Dakota or public safety entities within Region 32 (North Dakota) have ever engaged in any meaningful 700 MHz regional planning activities. Moreover, the State does not appear to have made any effort to coordinate its proposed broadband use of 700 MHz narrowband spectrum with 700 MHz RPCs for adjacent regions prior to submitting its waiver request to the FCC. In the absence of such regional planning, and concurrence from adjacent regions, the State cannot simply “hand over the reins” and transfer responsibility for administration of the 700 MHz narrowband spectrum, along with regional coordination obligations, to a commercial service provider. Nor can it entirely re-purpose the use of this spectrum at its sole discretion without coordination with neighboring RPCs.

This is particularly true since the Region 22 (Minnesota) RPC has proposed a plan for 700 MHz narrowband operations that could be put at risk by deployment of Flow Mobile’s broadband technology in the State of North Dakota. In this regard, Amendment No. 1 to the Region 22 700 MHz Regional Plan (filed in PS Docket No. 06-229) describes a plan to assign 25 kHz public safety “General Use” narrowband channels, as well as 12.5 kHz channels from the 700 MHz State License, for voice operations in

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- (6) A detailed description of how the plan put the spectrum to the best possible use by requiring system design with minimum coverage areas, by assigning frequencies so that maximum frequency reuse and offset channel use may be made, by using trunking, and by requiring small entities with minimal requirements to join together in using a single system where possible.
  - (7) A detailed description of the future planning process, including, but not limited to, amendment process, meeting announcements, data base maintenance, and dispute resolution.
  - (8) A certification by the regional planning chairperson that all planning committee meetings, including subcommittee or executive committee meetings, were open to the public.

(b) Modification of regional plans. Regional plans may be modified by submitting a written request, signed by the regional planning committee, to the Chief, Wireless Telecommunications Bureau. The request must contain the full text of the modification, and must certify that successful coordination of the modification with all adjacent regions has occurred and that all such regions concur with the modification.

each of Minnesota's eighty-seven (87) counties.<sup>33</sup> The *Region 22 Amended Plan* contemplates that narrowband base station operations will utilize channels in the 769-775 MHz band. However, if the State of North Dakota is permitted to use the 769-775 MHz band for the deployment and operation of a statewide public safety broadband network, these broadband transmissions are likely to cause harmful interference to 700 MHz narrowband operations in the State of Minnesota. This is especially true in Kittson, Marshall, Polk, Norman, Clay and Wilkin Counties, which are located along the Minnesota / North Dakota border, where significant cities and population centers lie in both states.

In fact, in February of 2007, the MN-RPC filed comments in PS Docket No. 06-229 which included the following statement (*emphasis in original*):

“MN-RPC **opposes** any leased, shared or secondary use of 700 MHz public safety spectrum by broadband commercial wireless providers or other non public safety entities. If permitted as proposed by the Commission, it must only be on a secondary basis and must not cause interference to any 700 MHz public safety systems operating in the band. If interference is experienced, interfering stations must either immediately alter or cease their operations to eliminate the interference.”

Thus, at least one jurisdiction neighboring North Dakota is already on record as opposing non-conforming narrowband use arrangements, which is what is proposed in the Flow Mobile and North Dakota waiver requests. Moreover, Rule Section § 90.527 (b) makes it clear that North Dakota would need to submit a modification to its regional plan, and obtain adjacent regions' consent, before they could re-purpose the narrowband General Use channels.

In contrast, the 700 MHz narrowband Interoperability channels are administered

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<sup>33</sup> See Minnesota Region 22 Planning Committee, Amendment Number One to 700 MHz Regional Plan, PS Docket No. 06-229 (filed December 14, 2007) (“*Region 22 Amended Plan*”) at pps. 8-51.

by the States under Rule Section § 90.525. With respect to the 700 MHz narrowband Interoperability channels, administration occurs at the state level either by a State Interoperability Executive Committee (SIEC) or an existing equivalent agency.

**§ 90.525 Administration of interoperability channels.**

(a) States are responsible for administration of the Interoperability channels in the 769–775 MHz and 799–805 MHz frequency bands. Base and control stations must be licensed individually. A public safety entity meeting the requirements of § 90.523 may operate mobile or portable units on the Interoperability channels in the 769–775 MHz and 799–805 MHz frequency bands without a specific authorization from the Commission provided it holds a part 90 license. All persons operating mobile or [ARE?] responsible for compliance with part 90 of these rules and other applicable federal laws.

(b) License applications for Interoperability channels in the 769–775 MHz and 799–805 MHz frequency bands must be approved by a state-level agency or organization responsible for administering state emergency communications. States may hold the licenses for Interoperability channels or approve other qualified entities to hold such licenses. States may delegate the approval process for interoperability channels to another entity, such as regional planning committees.

The FCC has promulgated a number of Part 90 Rules that are applicable to the licensing and use of spectrum in the 700 MHz public safety band. Among these rules is Section 90.1432, which specifies conditions for waiver to allow limited and temporary wideband operations in the 700 MHz public safety spectrum. While the wording of this rule is directed toward *wideband* operations (as opposed to *broadband* operations), the Commission never contemplated that parties would seek to deploy broadband systems on narrowband channels, since these operations are incompatible when they are on the same or adjacent channels and in the same geographic area. This is precisely the reason why the Commission found it necessary to include guard bands in its upper 700 MHz band plan. Broadband systems operating at commercial power levels are incompatible with narrowband voice and data operations.

Rule Section 90.1432 provides (in relevant part):

**§ 90.1432 Conditions for waiver to allow limited and temporary wideband operations in the 700 MHz Public Safety spectrum.**

(a) *Wideband operations in the 700 MHz public safety spectrum.* Wideband operations are prohibited in the public safety allocation of the 700 MHz band public safety spectrum except where the Commission has granted a waiver pursuant to §§ 1.3 and 1.925 of this chapter and subject to the additional conditions and requirements specified in this section. Grants of waiver are restricted to the deployment

of a wideband system in the consolidated narrowband portion or the internal public safety guard band portion of the public safety broadband spectrum. Where spectrum in the narrowband segment or internal guard band segment is unavailable for wideband operations, public safety entities may request a waiver to operate in the upper 1.25 megahertz of the public safety broadband spectrum.

(b) Any public safety entity seeking to conduct wideband operations within the public safety allocation must file a request for waiver that is accompanied by an application for authorization and includes the following information:

- (1) A letter from the public safety Broadband Licensee, confirming that the proposed wideband deployment is not inconsistent with the broadband deployment plan for the affected or adjacent service areas; and
- (2) A description of the conditions or transition requirements, if any, agreed to between the applicant and the public safety Broadband Licensee.

(c) *Additional requirement for wideband operations in the narrowband segment and Internal Guard Band.* If an applicant seeks permission to deploy wideband systems in the narrowband segment, its waiver request must also include a letter from the appropriate regional planning committee or state licensee confirming that the proposed wideband deployment will not disrupt any regional or state planning efforts that are underway.

(d) *Additional requirements and conditions for wideband operations in the broadband segment.* Permission to conduct wideband operations in the broadband segment will be granted only where spectrum in the narrowband segment or the internal guard band is unavailable for wideband operations. In no event will permission be granted to conduct wideband operations in geographic areas scheduled for broadband deployment within the first three years of the build-out plan for the Shared Wireless Broadband Network.

- (1) An applicant seeking permission to deploy wideband systems in the broadband segment must have first issued a request for proposal (RFP) that permitted interested parties to submit broadband proposals that are technically consistent with the Shared Wireless Broadband Network.
- (2) A request for waiver that seeks permission to deploy wideband systems in the broadband segment must include the following information:
  - (i) A substantially supported, detailed technical showing demonstrating that insufficient spectrum in the narrowband segment or the internal guard band is available to support the desired wideband operations;
  - (ii) A showing that rejected responses to the required broadband network RFP were more costly, provided less coverage as measured by throughput at the network edge, or were otherwise inferior to the accepted wideband proposal; and
  - (iii) A detailed plan for integration of such wideband system into the Shared Wireless Broadband Network. This plan must specify how and by what date the wideband applicant will integrate its proposed wideband system into Shared Wireless Broadband Network and must include a certification that the public safety entity will not seek reimbursement for any costs involved in converting the wideband system to Shared Wireless Broadband Network upon completion of that network in the applicant's geographic area.

Flow Mobile and North Dakota are proposing to use the narrowband interoperability channels for broadband operations. This is very different from and incompatible with narrowband use and the FCC rules do not contemplate a waiver process to allow broadband operations. Neither waiver request indicates that the proponent has obtained approval from the Public Safety Broadband Licensee confirming the proposed broadband operations are not inconsistent with broadband deployment plan

for the affected or adjacent service areas (*see* subsection (b)(1) below), nor any procedures for transition to the PSBL. Neither Flow nor the State of North Dakota has obtained letters from the adjacent state RPCs as required under subsection (c).

Subsection (d) indicates that the FCC expects waiver proponents “to have *first* issued a request for proposal (RFP) that permitted interested parties to submit broadband proposals that are technically consistent with the Shared Wireless Broadband Network.” See 47 CFR § 90.1432(d)(1)(*Emphasis added*) The rule also provides that waiver requests seeking authority to deploy wideband systems in the broadband segment (*i.e.*, an incompatible use) must include “a showing that responses to the required broadband network RFP were more costly, provided less coverage as measured by throughput at the network edge, or were otherwise inferior to the accepted wideband proposal.” North Dakota has not yet started its RFP process for the proposed public safety network, much less vetted multiple proposals to determine the most efficient and compatible use.

In keeping with the intent of the Commission’s Rules, the State of North Dakota and Flow Mobile (to the extent they seek to utilize public safety narrowband channels) should be required to follow similar procedures – since they were designed to protect 700 MHz narrowband operations in adjacent regions. This rule shows the FCC’s intent that disrupting the 700 MHz narrowband interoperability scheme should, at most, be temporary, and then only as a last resort after an RFP has failed.

## CONCLUSION

In summary, the *North Dakota Petition* and *Flow Petition* have serious flaws that are not present in the other public safety waiver requests: they appear to seek commercial use of public safety spectrum; they seek to disrupt the Commission-approved voice



interoperability plan for the nation; and they would appear to move toward incompatible, non-interoperable and potentially interfering uses of both broadband and narrowband 700 MHz spectrum. RTC therefore urges the Commission to deny the *North Dakota Petition* and the *Flow Petition*; to direct the State of North Dakota to follow compatibility requirements for waiver requests that have been enunciated by the PSST; and to condition any grant of a waiver seeking authority to deploy public safety broadband systems in the 700 MHz public safety broadband on use of LTE ready technology.

Respectfully Submitted,

**THE NORTH DAKOTA RURAL TELECOM  
COALITION**

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**Attachment A**

**THE NORTH DAKOTA RURAL TELECOM COALITION**

BEK Communications Cooperative	Steele, ND
Consolidated Telcom	Dickinson, ND
Dakota Central Telecommunications Cooperative	Carrington, ND
Dickey Rural Networks	Ellendale, ND
Griggs County Telephone Co.	Cooperstown, ND
Halstad Telephone Company	Halstad, MN
IdeaOne Telecom	Fargo, ND
Inter-Community Telephone Company	Nome, ND
Midstate Telephone Company	Stanley, ND
Moore & Liberty Telephone Company	Enderlin, ND
Nemont Telephone Cooperative	Scobey, MT
North Dakota Telephone Company	Devils Lake, ND
Northwest Communications Cooperative	Ray, ND
Polar Communications Cooperative	Park River, ND
Red River Rural Telephone Association	Abercrombie, ND
Reservation Telephone Cooperative	Parshall, ND
SRT Communications, Inc.	Minot, ND
United Telephone Mutual Aid Corporation	Langdon, ND
West River Telecommunications Cooperative	Hazen, ND

**Attachment B**

Response to Request for Information  
ND RFI No. 110.7-09-044 (*issued* August 21, 2009)

Study of Emerging Technology in Broadband Public Safety Networks  
by Cellco Partnership d/b/a Verizon Wireless, National Government Operations  
*dated* September 8, 2009



Response to Request for Information  
Study of Emerging Technology  
In Broadband Public Safety Networks

*Prepared for:*

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**The State of North Dakota**

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**September 8, 2009**

Cellco Partnership d/b/a Verizon Wireless  
National Government Operations  
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**DISCLAIMER**

All the information, statements and proposals in this document are correct and accurate to the best of our present knowledge but are not intended (and should not be taken) to be contractually binding unless and until they become the subject of separate, specific agreement between the parties.

COVER LETTER

Ms. Sherry Neas  
Project Manager  
State Procurement Office  
600 E. Boulevard Avenue – Dept. 012  
Bismarck, ND 58505-0310

Re: Broadband Public Safety Systems Request for Information  
RFI Number 110.7-09-044

Ms. Neas:

Verizon Wireless is pleased to respond to the Request for Information (“RFI”) entitled “Study of Emerging Technology in Broadband Public Safety Networks,” which was issued by the State of North Dakota’s Information Technology Department on August 21, 2009. Verizon Wireless shares the State’s view that emerging broadband technologies will enable first responders and other public safety officials to more effectively communicate during emergencies and on a daily basis. The State’s release of the RFI is very timely, as there have been significant changes in both the public safety community and in the commercial wireless industry that are likely to affect the availability of these broadband technologies for public safety’s use in North Dakota and throughout the country.

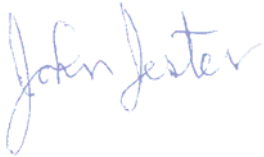
The development of a new wireless technology called Long Term Evolution (“LTE”) will enable higher speed and performance, lower latency, global roaming, and improved efficiencies, which translates into more reliable and more effective communications services for first responders and other government officials. Several of the nation’s largest public safety organizations have endorsed LTE as the preferred technology for broadband public safety communications and the National Public Safety Telecommunications Council (“NPSTC”) is developing technical and operational standards for LTE use. Verizon Wireless is planning to deploy LTE throughout its network over the next several years. More details about LTE and our deployment plans are provided in the following response.

The availability of 700 MHz spectrum for public safety’s use will provide state and local governments with greater control over their communications services. The Federal Communications Commission (“FCC”) is currently evaluating how this spectrum should be used, including whether to permit the deployment of LTE networks on a regional basis and how to promote partnerships with commercial operators.

The availability of 700 MHz spectrum and the use of LTE are two critical components to addressing public safety’s need for more effective communications. Together, they will enable not only the interoperability of private networks dedicated for public safety’s use (where they are deemed necessary), but also interoperability with the commercial 4G networks that will be widely deployed in the 700 MHz spectrum by commercial service providers. The result is a “network of networks” that will provide the speed, reliability, security, interoperability and cost effectiveness necessary for supporting public safety’s diverse communications needs including the front-line law enforcement officer. Public safety officials in North Dakota and elsewhere will then have the resources they need to identify and implement the best possible solutions that meet their specific needs.

We value our relationship with the State of North Dakota, and look forward to a continued long term relationship. We hope the information provided herein will be helpful to the State as it collects information about emerging broadband technologies and prepares for the Request for Proposal (“RFP”) phase of this project. Thank you again for the opportunity to respond to the State’s RFI.

Sincerely,



John Jester  
Associate Director, Government Contracts and Proposals



## SECTION I – COMPANY PROFILE

### **A. Verizon Wireless' Qualifications and Experience**

Verizon Wireless owns and operates the nation's most reliable wireless network. Headquartered in Basking Ridge, NJ, Verizon Wireless is a joint venture of Verizon Communications (NYSE:VZ) and Vodafone (NYSE and LSE: VOD). A leader in wireless voice and data services, the company:

- built the nation's first wide-area wireless broadband network
- delivered the nation's first wireless consumer 3G multimedia service
- has the highest customer loyalty in the industry based on lowest-in-industry churn

#### **Facts-at-a-Glance**

- Wireless Phone Customers – 87.7 Million
- Employee Population – more than 87,000
- Annual Revenue 2008 – \$58.6 Billion (USD)
- Company Operated Stores and Kiosks – approximately 2,000
- Digital Network Technology – Code Division Multiple Access [CDMA]
- Nation's largest high-speed wireless broadband network
- Switching Centers – 175+
- Headquarters – Basking Ridge, NJ
- Area Headquarters:
  - Northeast – Morristown, NJ
  - Midwest – Schaumburg, IL
  - South – Alpharetta, GA
  - West – Irvine, CA

Verizon Wireless has been in business since June 2000; however the companies that merged to form Verizon Wireless had been in business for an average of 15 years. Verizon Wireless was formed by the combination of the domestic wireless businesses of Verizon Communications (formerly Bell Atlantic Corporation and GTE Corporation) and Vodafone Group Plc. This includes, primarily, the assets of Bell Atlantic Mobile, Vodafone AirTouch Cellular and GTE Wireless.

Verizon Wireless currently provides voice and data services to many of the Fortune 500 Corporations, state and local governmental entities, all Federal Government Agencies, and other organizations. Several of these entities are in excess of 10,000 subscriber lines. Verizon Wireless has considerable experience providing service to accounts of that size as well as smaller city and county government agencies.

We have a dedicated Government Sales organization that is focused on meeting the needs of the Government customer. Our established relationships and service reputation has assisted in expediting and facilitating wireless solutions for the Government customer. The capabilities demonstrated within this proposal will confirm our ability to help design, customize, implement and maintain a solution that meets all expectations.

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**B. Financial Information**

The State may access a copy of the most recent annual report of Verizon Wireless' parent companies from the following websites:

<http://www.verizon.com>

<http://www.vodafone.com>

On December 15, 2006, Verizon Wireless repaid all of its outstanding public debt. Consequently, effective December 18, 2006, Verizon Wireless ceased to be a reporting company under the Securities Exchange Act of 1934 and to make SEC filings. Older SEC filings can be accessed at the following link:

<http://www.news.vzw.com/investor/index.html>

Additional information can be found in the Verizon Wireless Dun and Bradstreet report. The Dun and Bradstreet number for Verizon Wireless is 96-890-4698. Your agency may use this identification number to access the Verizon Wireless report from the Dun and Bradstreet database.

Any financial information not included in the annual reports, the Dun and Bradstreet report, or the SEC filings, is considered proprietary and confidential.

## SECTION II – NETWORK

### A. Existing Technology

As the owner and operator of the nation's most reliable network, Verizon Wireless provides 800 and 1900 MHz CDMA digital voice and data services, CDMA2000 EV-DO high-speed data-only Mobile Broadband service and CDMA2000 1xRTT NationalAccess service.

Verizon Wireless' CDMA technology offers the following advantages over other technologies:

- CDMA technology is one of the most spectrally-efficient digital standards available. Increased spectrum capacity means more calls are completed and busy signals and dropped calls are avoided.
- Blocked calls are minimized on the Verizon Wireless network due to the increased capacity of CDMA. CDMA digital technology assigns each conversation a code, rather than separate frequencies or channels. CDMA can accommodate multiple conversations on a single channel, making it easier for calls to go through. All subscribers share the same range of radio spectrum.
- CDMA employs coding technology that provides improved voice quality while virtually eliminating static and cross talk. It also provides a "soft hand-off" capability that makes hand-offs from one cell tower to another virtually unnoticeable to subscribers.
- CDMA technology also offers increased privacy and security by converting speech into code and transmitting it in a random sequence.

Our CDMA technology has enabled Verizon Wireless to provide the nation's most reliable nationwide wireless broadband network. Our Mobile Broadband premier data-only service, powered by our CDMA2000 Evolution-Data Optimized (EV-DO) network, has typical speeds of 600 Kbps–1.4 Mbps<sup>1</sup>. Mobile Broadband enables your remote workers and road warriors to quickly download complex files and view email attachments. Mobile Broadband' CDMA technology also provides authentication and data protection and is compatible with many virtual private networks. With Mobile Broadband-compatible equipment, this service is presently available to more than 281 million people in 259 major metropolitan areas and 250 airports in the U.S. and in certain parts of Canada and is expanding coast-to-coast. Mobile Broadband is seamlessly backward compatible with Verizon Wireless' high-speed wireless third generation (3G), 1xRTT national network service "NationalAccess" to optimize subscriber service. NationalAccess, which supports voice and data in the same spectrum, is available in Verizon Wireless' entire coverage area.

Verizon Wireless offers EV-DO Rev. A throughout our Mobile Broadband footprint. EV-DO Rev. A is backwards compatible with EV-DO Rev. 0. This is important because it means that EV-DO Rev. 0 capable equipment that is currently in use will not lose functionality due to deployment of EV-DO Rev. A technology.

### B. Long-Term Evolution

LTE, which stands for Long Term Evolution, is the technology that will power Verizon Wireless' fourth generation (4G) mobile broadband network. The technology is designed to deliver mobile data networks with higher speed and performance, lower latency, global roaming, and improved efficiencies. Currently, our high-speed wireless network, which powers our Mobile Broadband Internet applications, is based on Evolution Data Optimized (EV-DO) Revision A technology. Our 3G technology offers typical download speeds of 600 Kbps-1.4 Mbps while our 4G technology is

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<sup>1</sup>Speeds require an EV-DO Rev. A-capable device. When using an EV-DO device that is not Rev. A-capable, you can expect download speeds of 400-700 Kbps and upload speeds of 60-80 Kbps. Mobile Broadband speed claims are based on our network tests with 5MB FTP data files, without compression.

expected to deliver average user throughputs of approximately 7-12 Mbps on the downlink and approximately 3-5 Mbps on the uplink<sup>2</sup>, coupled with dramatic improvements to data latency.

LTE offers advantages for broadband public safety communications that cannot be matched by other 4G wireless technologies. Recognizing these advantages, several national public safety organizations have endorsed LTE as the preferred technology for 4G broadband wireless communications. These organizations include the Association of Public-Safety Communications Officials International ("APCO"), the National Emergency Number Association ("NENA"), the National Public Safety Telecommunications Council ("NPSTC"), and the Public Safety Spectrum Trust ("PSST"). NPSTC is currently developing technical and operational standards that are based on the use of LTE for all public safety broadband networks. These recommendations are expected to be a focal point of the evaluation being conducted by the Federal Communications Commission as part of its review of currently proposed regional public safety networks, including the network proposed by the State of North Dakota. We expect the Commission to ultimately require the use of LTE for such networks and to adopt the recommended NPSTC standards.

LTE provides Verizon Wireless with the opportunity to move to a common platform with Vodafone, enabling us to jointly develop innovative services and to expand our roaming relationship. As a result of our joint work within the Third Generation Partnership Project (3GPP) standards organization, both companies will have robust interworking between LTE and our legacy technologies. Working within the 3GPP, Verizon and Vodafone, as well as a broad group of infrastructure suppliers, device suppliers, and technology companies from around the world, have advanced the standards to enable a technology that will deliver unprecedented wireless broadband service for high performance mobile computing, multimedia, and consumer electronic devices and applications. Verizon Wireless recently completed its first successful Long Term Evolution (LTE) fourth generation (4G) data call in Boston based on the 3GPP Release 8 standard; the company also completed the first LTE 4G data call based on the 3GPP Release 8 standard in Seattle. The successful data calls involved streaming video, file uploads and downloads, and Web browsing. Significantly, Verizon Wireless has successfully made data calls using Voice over Internet Protocol (VoIP) to enable voice transmissions over the LTE 4G network. This combination of state-of-the-art technology and prime spectrum will soon make a ubiquitous, highly mobile, super-fast broadband experience a reality for customers.

The selection of LTE provides Verizon and Vodafone - our parent companies - with a unique opportunity to adopt a common access platform with true global scale and compatibility with existing technologies of both companies. Verizon Wireless and Vodafone have recently completed 4G LTE field testing utilizing our 700 MHz spectrum in Boston, Massachusetts and Seattle, Washington. Because LTE is a global standard and will be used by our customers outside of the U.S., field testing has been completed in Budapest, Dusseldorf and Madrid.

The Verizon LTE Innovation Center, based in Waltham, MA, will serve as the catalyst for early development of non-traditional products for use on LTE networks. Our LTE Innovation Center will include a lab for product testing and development, as well as home and business environments designed to simulate usage of products in real-life situations. The Verizon Wireless LTE Innovation Center is expected to see significant activity across four product areas: 1) consumer electronics and appliances; 2) machine-to-machine (M2-M) products in the areas of healthcare, security and utility metering; 3) telematics; and 4) public safety.

In February 2009, we announced the selection of Ericsson and Alcatel-Lucent as the primary network equipment vendors for our initial LTE network deployments in the U.S. These two vendors are expected to build the underlying infrastructure that will enable us to become the first wireless carrier to offer commercial LTE-based services in the U.S. in 2010. We also selected Nokia Siemens Networks and Alcatel-Lucent as key suppliers for the IP Multi-media Subsystem (IMS) network, which will enable rich multimedia applications regardless of access technology. LTE will be one of the key wireless access networks linked to IMS technology.

In May 2009, we announced the selection of Giesecke & Devrient (G&D) to provide special Java-based SIM cards from the G&D SkySIM® product line for our 4G network. We also selected Gemalto to provide an over-the-air

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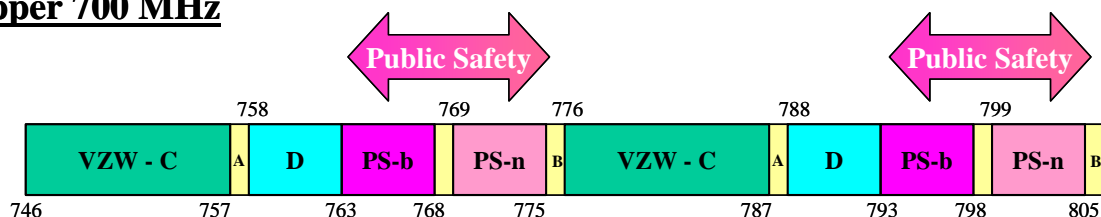
<sup>2</sup> Actual average throughputs may vary.

(OTA) platform and LTE Universal Integrated Circuit Card (UICC) for our 4G network. The OTA platform and UICC will help us deliver a secure and reliable multimedia data connection, provide global roaming and remotely add new UICC card applications and services on our 4G network. The UICC is a new, innovative microprocessor smart card and will be used inside mobile devices to manage subscriber information exchange – such as transferring contacts and preferences from one device to another – while providing secure access to Verizon Wireless’ 4G network.

Verizon Wireless is well positioned with respect to spectrum licenses and existing network infrastructure, which are critical for the provision of 4G services. Our LTE network will utilize the 700 MHz contiguous C-Block spectrum we acquired in 2008. We plan to launch this network in approximately 30 commercial markets in 2010, and expect to extend the LTE network to cover our entire existing U.S. footprint by the end of 2013. Ultimately, the significant propagation advantages of our 700 MHz spectrum will enable us to expand our network into areas not currently covered by our existing footprint. Verizon Wireless is the only wireless service provider to hold a contiguous, nationwide 700 MHz C-Block license. This spectrum is adjacent to spectrum that is allocated for public safety use, which uniquely positions Verizon Wireless to partner with public safety. The contiguous spectrum can be used by public safety for integrated communications across different departments and agencies across the state of North Dakota and across the country.

## 700MHz Public Safety – D Block Landscape

### Upper 700 MHz



**PS-b: Public Safety-Broadband**  
**PS-n: Public Safety-Narrowband**

While we are excited about our LTE plans, our customers will continue to use our CDMA network for many years to come. We will continue to maintain and ensure our existing voice and data network is available to meet the needs of our customers as we build out our 4G network.

## C. Reliability

Verizon Wireless’ commitment to quality is evident in our ongoing investment in the expansion and enhancement of our network. We are committed to providing our customers with access to the most reliable wireless network in the country. To this end, Verizon Wireless has invested more than \$50 billion in our network during the last eight years – more than \$5.5 billion on average every year. This investment has broadened the scope of our network coverage while increasing the reliability and capability of the wireless services we provide to our customers.

We strive to operate our wireless network at optimal performance levels so that we can continue our record of providing the most reliable nationwide wireless network. We continually test and evaluate network performance, and when service anomalies are detected, we take immediate steps to resolve or remediate the situation. Our maintenance organization staff members are distributed in centers across the country and have areas of expertise and responsibility, such as microwave, switch, cellular radio, power. They are also cross-trained to handle a wide variety of system maintenance issues - all in an effort to maintain service reliability. Our success in these efforts is evidenced by the fact

that fewer than 2 percent of the calls placed on Verizon Wireless' network are dropped or fail to initially connect - even during the busiest hours of the day - as well as by our continual subscriber growth.

Our reliable network is a combination of strong technology and capable employees. Network operations teams across the country conduct exercises each year to confirm team members have access to contacts, systems, tools, and suppliers to resolve any potential disaster or disruption that occurs. These teams are empowered to identify and implement ways to make our network stronger, more efficient, and available for our customers when they need it, even during natural disasters. Thanks to these efforts and ongoing preparations and investments, our network has stayed strong - even through the natural disasters of past years - while other communication networks often were adversely impacted or failed.

Verizon Wireless provides voice and data service through a sophisticated network consisting of dozens of switching systems and thousands of base stations throughout our cellular footprint. Many critical network systems are located in geographically diverse locations. The most critical systems provide un-interrupted service to customers, even if one location is damaged. These systems are designed to automatically fail-over to an alternate location with minimal, if any, impact to customers. These systems are tested at least annually as part of the Business Continuity/Disaster Recovery program, and in many cases are tested more frequently to maintain reliable service.

Many critical circuits in our network infrastructure are provisioned with special priority. This is intended to ensure that in the event of a disruption, these circuits are repaired as quickly as possible. The costs for this service are just one part of our significant ongoing investment in network reliability.

Verizon Wireless' two Network Operations Centers (NOCs) serve as the hubs of the company's regional network operations. The NOCs are located in Bedminster, NJ and Southlake, TX, and operate 24 hours a day, 7 days a week, 365 days a year. The NOCs are capable of detecting network failures, diagnosing the failure, sending out repair personnel and tracking the problem to conclusion. If an outage does occur, a field engineer is dispatched as soon as possible to correct the problem and bring the cell site back on line.

The NOCs monitor cell sites, mobile switching centers, mobile data switching systems, and transmission facilities for potential problems. Equipment electronically tracks system alarms and immediately reports them. When an alarm is activated, the NOC receives detailed information from the network management system, including cell location, the switch location, the contact numbers for local commercial power companies, police and fire departments, and even driving directions to the cell site. Verizon Wireless network surveillance engineers perform remote diagnostic procedures and, in some cases, restore service.

Service protection and restoration strategies are an integral part of Verizon Wireless's network management. Switches and cell sites are continuously monitored for numerous factors, from call processing to room temperature. All switches and cell sites have battery backup, and in some cases, independent diesel power sources.

In areas known to have system limitations, Verizon Wireless may initiate corrective actions transparent to the subscriber. Some examples of these actions would include:

- Redirecting antenna on a designated cell site.
- Adjusting power levels on cell site components to increase performance.

It is important to note that the provision of wireless communication services is potentially impacted by many external factors beyond the reasonable control of Verizon Wireless. Reception may be effected due to topography, atmospheric and environmental conditions, and the location of the user.

While Verizon Wireless reserves full discretion over its network and partnership arrangements, we will work with our customers where difficulty accessing the Verizon Wireless network is specifically identified.

## **D. Redundancy and Backup**

Verizon Wireless provides voice and data service through a sophisticated network consisting of dozens of switching systems and thousands of base stations throughout our cellular footprint. The fully redundant switching systems are distributed throughout different geographic regions in order to reduce the possibility of losing more than one switch due to an unexpected occurrence. In the event of a disaster, Verizon Wireless will work tirelessly to restore service to our subscribers.

Verizon Wireless has taken significant precautions to minimize the possibility of interruption to our network locations, including redundancy designed into the equipment and circuitry, back-up batteries and generators, fire detection and suppression systems, and security systems for the buildings. We also maintain and utilize portable cells-on-wheels ("COWs") and cell-on-light-trucks ("COLTs"), which are fully functional generator-powered cell sites that can replace or enhance network coverage and capacity in a given area. They can accommodate both voice and data services, and can be deployed for emergency situations across the country. In addition, Verizon Wireless has implemented Telecommunication Service Priority (TSP) capabilities on critical backhaul circuits, which provides priority service restoration if a circuit is disrupted.

## **E. System Operations**

Verizon Wireless' two Network Operations Centers (NOCs) serve as the hubs of the company's regional network operations. The NOCs are located in Bedminster, NJ and Southlake, TX, and operate 24 hours a day, 7 days a week, 365 days a year. The NOCs are capable of detecting network failures, diagnosing the failure, sending out repair personnel and tracking the problem to conclusion. If an outage does occur, a field engineer is dispatched as soon as possible to correct the problem and bring the cell site back on line.

The NOCs monitor cell sites, mobile switching centers, mobile data switching systems, and transmission facilities for potential problems. Equipment electronically tracks system alarms and immediately reports them. When an alarm is activated, the NOC receives detailed information from the network management system, including cell location, the switch location, the contact numbers for local commercial power companies, police and fire departments, and even driving directions to the cell site. Verizon Wireless network surveillance engineers perform remote diagnostic procedures and, in some cases, restore service.

## **F. Business Continuity and Disaster Recovery**

Verizon Wireless has taken many steps to prevent outages from affecting our subscribers. Our emergency response capabilities have been tested and proven during many difficult situations including the wildfires of 2007 and 2008, tornadoes in the Midwest and South in 2008, flooding in the Northwest, and the extraordinary hurricane seasons of 2004 and 2005. Our network in Florida withstood the impact of eight hurricanes in 2004 and 2005 and delivered top performance compared with other communication networks.

Verizon Wireless has a cross-functional Business Continuity and Disaster Recovery ("BC/DR") team responsible for minimizing the impact of a disruption for our customers, employees, infrastructure and business operations.

There are 39 crisis management teams in place across the company, including more than 1,300 leadership employees from the Regions, Areas, and Headquarters. Each team is responsible for managing the Verizon Wireless response to a crisis in its geography or building. These teams include primary and backup contacts from all major departments who manage the response to a crisis, if one should occur. The teams are led by the Area or Region Presidents and typically include Director-level employees.

The BC/DR team accomplishes its objective by focusing on the following activities:



- identify critical processes, infrastructure and risks;
- implement strategies to minimize the risk of a disruption; and
- develop business continuity, disaster recovery and crisis management plans to recover operations in the event of a disruption;
- test our plans to validate our response capabilities.

#### Network Operations:

Verizon Wireless deploys and maintains a wireless network designed to minimize service interruptions for our subscribers. We invest in state-of-the-art equipment throughout the network, and employ continuous system monitoring and maintenance.

Verizon Wireless' Network Operations Centers (NOCs) monitor systems for numerous factors, ranging from call processing volumes to room temperature in our Mobile Switching Centers (MSCs) and our cell sites. These NOCs are staffed 24x7 with experienced personnel who work closely with our regional field operations teams to coordinate and expedite the restoration of service in the event of outages. Each NOC receives alarms or other indicators that help troubleshoot problems in the network. The NOCs are also in regular contact with the voice and data customer care centers.

Verizon Wireless has taken significant precautions to minimize the possibility of interruption to our network locations, including redundancy designed into the equipment and circuitry, back-up batteries and generators, fire detection and suppression systems, and security systems for the buildings. We also maintain and utilize portable cells-on-wheels ("COWs") and cell-on-light-trucks ("COLTs"), which are fully functional generator-powered cell sites that can replace or enhance network coverage and capacity in a given area. They can accommodate both voice and data services, and can be deployed for emergency situations across the country.

Verizon Wireless' Information Technology (IT) Disaster Recovery Team develops, tests, and maintains disaster recovery plans for mission critical applications in the data centers. Our major data centers are protected by automatic fire detection and suppression systems, and by physical security systems and alarms. In addition, all data centers are backed-up by battery and generator systems which are designed to support data for an extended timeframe. Disaster recovery plans for critical systems and infrastructure are tested on a regular basis.

#### Customer Service:

Verizon Wireless' customer service teams operate multiple contact centers across the country and can automatically reroute customer calls to alternate call centers in the event of a disruption at one location. In addition, our communications equipment is supported by back-up batteries and back-up generator power. These business continuity plans are tested and updated on a regular basis so that we can continue to maintain high levels of service for our enterprise customers.

#### Crisis Response Team:

The Verizon Wireless Crisis Response Team (V-CRT) is a nationwide program sponsored and managed by the National Government Sales & Operations team. When a natural disaster or crisis occurs, V-CRT provides support to those in need and responds to government and non-profit organizations and emergency management agencies that need our assistance. V-CRT provides the following support in the event of a crisis:

- Deployment of COW/COLT/crisis response vehicle
- Back-up phone coverage
- Equipment/Network support
- Assistance with search and rescue initiatives
- A live support line to request help 24/7
- Best-in-class customer support
- Routing of requests to the Law Enforcement Response Team (LERT)



- One phone number (800-981-9558) to call in a crisis situation.

This process links together, for the first time, management of crisis situations in one location for the entire Verizon Wireless community. V-CRT aligns network, operations, legal and sales – allowing us to react quickly to a crisis situation. The benefit to our customers and to emergency management agencies is tremendous.

## **G. Fraud**

Verizon Wireless takes your information security concerns seriously. We follow generally accepted practices to secure our internal systems. We operate under a detailed, rigorous information security policy, and we maintain physical, electronic and procedural safeguards to protect the security of our internal systems.

Verizon Wireless secures your information on our network by:

- Employing strong user authentication technology to make certain that only authorized users and devices connect to the Verizon Wireless network and systems.
- Implementing internal and external security procedures to guard our networks and applications against unauthorized access.
- Installing firewalls and intrusion detection sensors configured to notify IT staff in the event of an attack on the network.
- Monitoring the Verizon Wireless networks around the clock at our Network Operation Centers.
- Maintaining an active security patch management process to deploy updated software releases when reliable sources identify potential security vulnerabilities.

## **H. Wireless Priority Service**

Verizon Wireless has worked closely with the National Communication System (NCS) of the Department of Homeland Security to develop national Wireless Priority Service (WPS) on the Verizon Wireless Code Division Multiple Access (CDMA) voice network. WPS is a federal program that will provide the benefit of priority network access for certain government and industry subscribers that must have communications capabilities in times of national security and emergency preparedness.

Verizon Wireless has begun to deploy the service in the most highly populated government markets across the United States and will continue to add additional markets. WPS does not support services available on Verizon Wireless' data network.

### Using Wireless Priority Service:

During times of emergency, WPS will give emergency service personnel - including Federal, state and local government officials, law enforcement agencies and designated private sector responders - priority in placing calls. While priority calls do not preempt calls in progress, WPS will allow authorized users to gain priority access to the next available wireless channel, thereby increasing their probability of call completion during an emergency. Calls placed by individuals without priority access will still be given access to the network.

Once WPS is activated, registered users simply dial \*272 before dialing the 10-digit telephone number. The call will automatically be placed in high-priority status and will be given priority for the next available wireless channel.

### How to Sign Up for WPS:

To take advantage of WPS on the Verizon Wireless network, authorized national security and emergency preparedness users must first apply to the NCS to receive this service by visiting the NCS' website at <<<<http://wps.ncs.gov/request.html>>>>. Once NCS confirms eligibility, the NCS will then notify Verizon Wireless

that the official has been approved for WPS and that the service can be added to the user's account. Users may also contact their Verizon Wireless Account Manager or the WPS Activation and Support department at 877-262-2950 for further information.

## SECTION III – COVERAGE

### A. Network Coverage

The Verizon Wireless network covers approximately 90 percent of the population within our licensed U.S. territories. As of first quarter 2009, the total number covered was 299,212,905 and 281,481,915 for voice and EV-DO customers, respectively. We currently offer coverage in all 50 states. For additional information, please see the Verizon Wireless domestic rate and coverage maps or visit <http://www.verizonwireless.com/coveragelocator>.

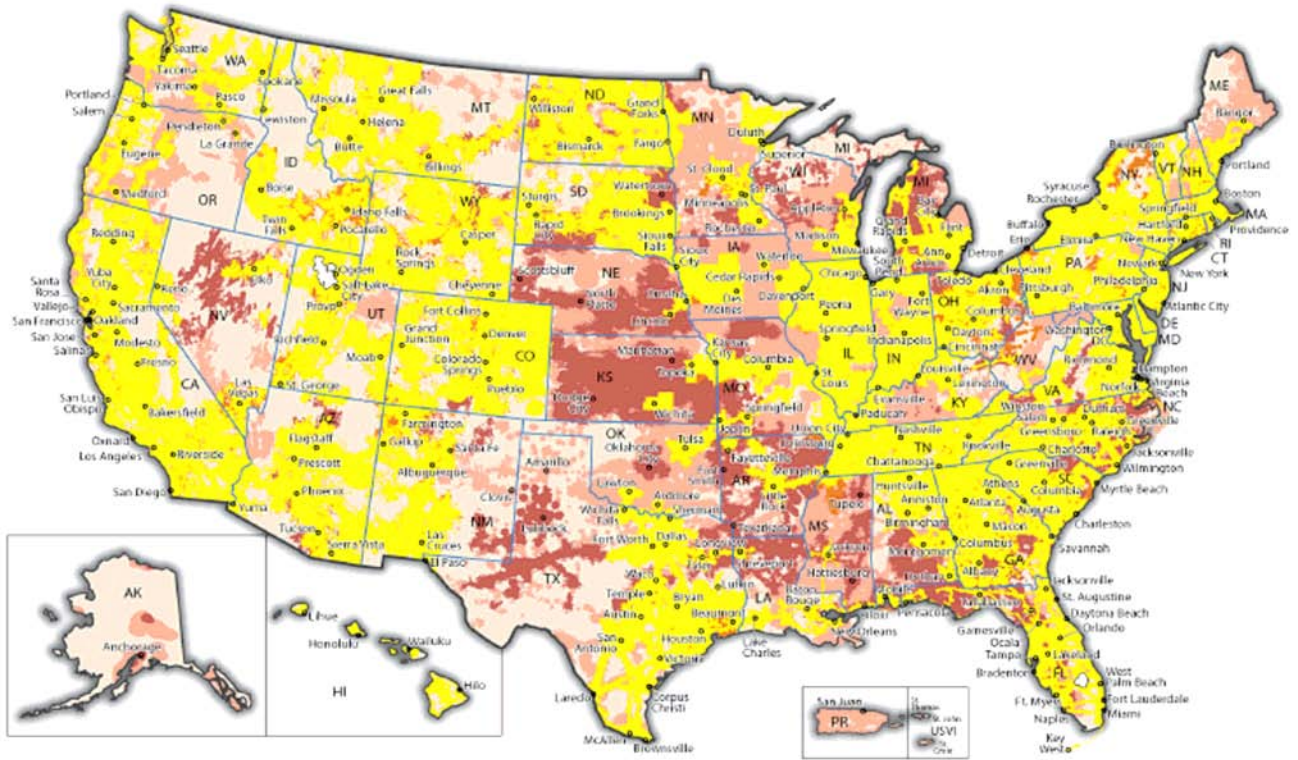
### B. Coverage Maps

Verizon Wireless has provided coverage maps for the State's review. Our rate and coverage area maps contain areas both with and without service, and are a general prediction, based on our internal data, of where rates and coverage apply. Accordingly, a rate and coverage area map does not completely depict actual service availability or wireless coverage.

Our interactive tool, Coverage Locator, depicts our coverage area on a nationwide map that can zoom into any local area by entering that area's ZIP Code or the city and state information. **The maps rendered show approximations, based on our internal data, of where rates and coverage apply and are not a guarantee of coverage and contain areas with no service.** Our online Coverage Locator tool can be accessed at <http://www.verizonwireless.com/b2c/CoverageLocatorController?market=all>.

If the State needs to review more detailed information for its key locations in order to make its final vendor decision, your Account Manager, in conjunction with network staff, can review coverage details with the State, after execution of a Non-Disclosure Agreement. Verizon Wireless' network maps, as well as details regarding its voice and data networks, are proprietary and confidential.

## Mobile Broadband/V CAST /Push to Talk National Enhanced Services Rate and Coverage Area United States

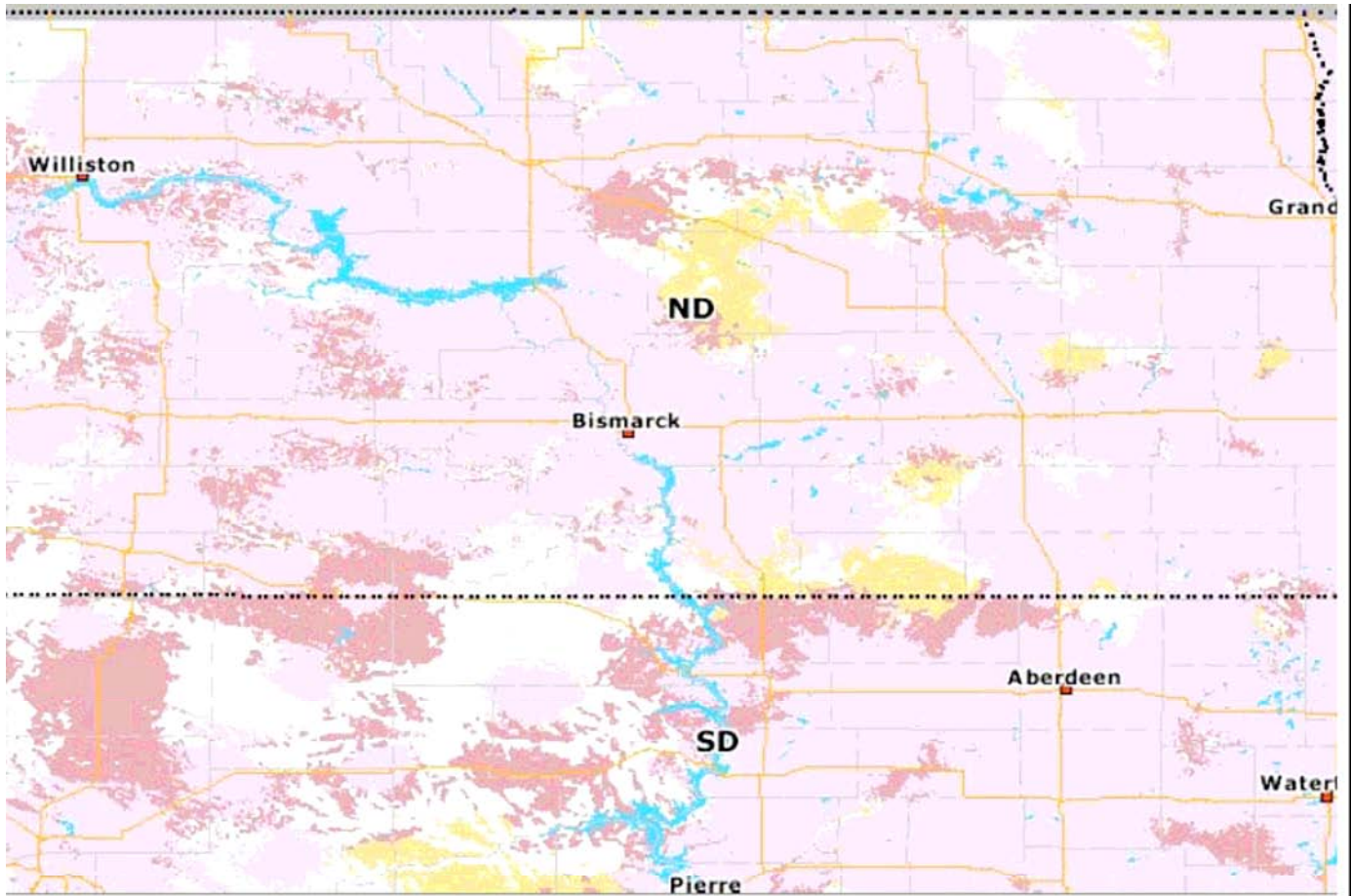


- Broadband Services Rate and Coverage Area (Mobile Broadband, V CAST and Push to Talk)
- National Enhanced Services Rate and Coverage Area (BlackBerry and Smartphone Solutions, Get It Now, LBS Solutions [VZ Navigator and Chaperone Services], Mobile Web 2.0, NationalAccess, Picture/Video/Text Messaging, Push to Talk)
- Extended Broadband Services Rate and Coverage Area (Mobile Broadband and V CAST)
- Extended National Enhanced Services Rate and Coverage Area (BlackBerry and Smartphone Solutions, Get It Now, Mobile Web 2.0, NationalAccess, Text/Picture/Video Messaging)
- National Enhanced Services Not Available

Go to <http://www.verizonwireless.com/bbcoverage> to see the latest national and local coverage.

**This map is not a guarantee of coverage and may contain areas with no service.** This map reflects a depiction of predicted and approximate wireless coverage. The coverage areas shown do not guarantee service availability and may include locations with limited or no coverage. Even within a coverage area there are many factors, including customer's equipment, terrain, proximity to buildings, foliage, and weather, that may impact service. An all-digital device will not operate or be able to make 911 calls when digital service is not available. The Verizon Wireless Rate and Coverage Area includes networks run by other carriers; some of the coverage depicted is based on their information and public sources and we cannot ensure its accuracy. Service may not be available for certain devices throughout the Extended National Enhanced Services Rate and Coverage Areas. See [verizonwireless.com/coverageLocator](http://verizonwireless.com/coverageLocator) for additional coverage information. ©2008 Verizon Wireless. All rights reserved. 1208

State of North Dakota Data Coverage Map



- ☐ Broadband/V CAST/PTT <sup>3</sup>
- ☐ Ext. Broadband/V CAST <sup>1,2</sup>

Coverage Shown: Broadband/V CAST/PTT

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- ☐ Nat'l Enh. Svcs/PTT <sup>3</sup>
- ☐ Nat'l Access Ext. Svc <sup>1</sup>

- ☐ No Service

The map is not a guarantee of coverage and contains areas with no service.

**Attachment C**

RFI Cancellation Notice, ND Solicitation No. 110.7-09-044,  
by email dated September 4, 2009 from the ND State Procurement Office



## Cary Mitchell

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**From:** ND State Procurement Office [infospo@nd.gov]  
**Sent:** Friday, September 04, 2009 2:11 PM  
**To:** Cary Mitchell  
**Subject:** Notice of North Dakota State Procurement Opportunity

The following State Procurement Opportunity has been cancelled.

Replies to this email will be sent to the issuing agency's Procurement Officer.

Solicitation Number: 110.7-09-044

Type: Request For Information

Title: Study of Emerging Technology in Broadband Public Safety Networks Issuing Agency:  
Management & Budget, Office of - State Procurement Office

Short Description: The State seeks proposals from offerors with Proposed Broadband Public Safety Networks for the purposes of studying emerging technology and evaluating its impact on the State's information system.

Issued: 08/21/2009

Deadline for Questions: 08/28/2009 05:00 PM CT

Closes: 09/08/2009 02:00 PM CT

Reason for Cancellation: The State determined it was necessary to cancel based upon the number/complexity of questions received and the time schedule.

The solicitation will NOT be reissued.

Instructions: Visit the North Dakota State Procurement Opportunities website and click on Bid Opportunities to obtain a copy of this solicitation, amendments and all related documents.

[WWW.ND.GOV/SPO](http://WWW.ND.GOV/SPO)

You must contact the Procurement Officer if you have any questions regarding this solicitation or are unable to obtain the documents from the website.

Procurement Officer: Sherry Neas

Telephone: 701-328-1726

TTY: 711

Fax: 701-328-1615

Email: [sneas@nd.gov](mailto:sneas@nd.gov)

Thank you for your interest in doing business with the State of North Dakota!

Are you on the State Bidders List? Check the [WWW.ND.GOV/SPO](http://WWW.ND.GOV/SPO) website. Update your information or unsubscribe from the State Bidders List by contacting the State Procurement Office at [spovendor@nd.gov](mailto:spovendor@nd.gov), fax: 701-328-1615, phone: 701-328-2683.

**Attachment D**

**Declaration of John Michael DeWitte, P.E.**

Vice President of Engineering, Vantage Point Solutions - Mitchell, SD




## DECLARATION OF JOHN MICHAEL DE WITTE

I, John Michael De Witte, hereby declare under penalty of perjury under the laws of the United States of America as follows:

1. I am a licensed Professional Engineer in several states including the State of North Dakota (ND Professional Engineering License Number PE 4639). I am the Vice President of Engineering of Vantage Point Solutions, Inc. (VPS). VPS is a telecommunications engineering and consulting firm in Mitchell, South Dakota with a full-time staff of over 100 employees. Our client base of VPS is made up of rural independent Local Exchange Carriers (LECs). I received a Bachelors of Science in Computer Engineering (1982) from Iowa State University (Ames, IA) and a Masters of Business Administration (1992) from Kennesaw State College (Kennesaw, GA).

2. I have reviewed and assisted in the preparation of the foregoing "Comments of the North Dakota Rural Telecom Coalition." With the exception of those facts of which official notice can be taken, all of the technical/engineering/industry facts, descriptions and observations set forth therein are true and correct to the best of my knowledge, information and belief.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 14<sup>TH</sup> day of October 2009.

  
\_\_\_\_\_  
John Michael De Witte  
Vice President of Engineering

## Service List

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